



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/890,490	07/31/2001	Alan Chin Leong Yeo	N0 17751US	1700
65913	7590	07/31/2008		
NXP, B.V. NXP INTELLECTUAL PROPERTY DEPARTMENT M/S41-SJ 1109 MCKAY DRIVE SAN JOSE, CA 95131			EXAMINER NGUYEN, DUC M	
			ART UNIT 2618	PAPER NUMBER
			NOTIFICATION DATE 07/31/2008	DELIVERY MODE ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

ip.department.us@nxp.com

Office Action Summary	Application No. 09/890,490	Applicant(s) YEO ET AL.	
	Examiner DUC M. NGUYEN	Art Unit 2618	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 May 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 10, 11 and 13-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 10-11, 13-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This action is in response to the RCE filed on 5/3/07. Claims 10-11, 13-20 are now pending in the present application.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims **10-11** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Kim** in view of **Sakashita** et al (US **4,939,789**) and **Enoki** (JP 0729779 A).

Regarding claim **10**, **Kim** discloses a method of tuning a receiver for a RF signal (see Fig. 2A), comprising:

- one or more filters that are configured to filter an input signal to obtain a processed signal (see Fig. 2A regarding refs. 204, 206);

- a decoder that is configured to determine a digital figure of merit from the processed signal (see Fig. 2A and refs. 210, 211, 216, and col. 4, line 60 – col. 5, line 29), wherein it is clear that in order to tune the center frequency of the filters and also provide an AFC tuning signal, **Kim** would obviously, if not implicitly, teach a frequency deviation error or a BER (both of which would be a “digital value” and would read on a “digital figure-of-merit” as claimed) is measured, and then converted to the control signal in order to tune the filters and the synthesizer of the receiver to the frequency of the received signal, in the similar way as disclosed by **Enoki**

(see Abstract, and Figs. 1-2 regarding frequency deviation error or BER measurements for the AFC); and

- a controller that is configured to adjust a center frequency of at least one of the one or more filters in dependence on the digital figure of merit (see col. 5, lines 33-36).

However, **Kim** fails to disclose the tunable filter 206 is a double tuned band filter. However, using a double tuned band filter for a tunable filter is well known in the art as disclosed by **Sakashita** (see Fig. 22, col. 11, lines 60-68). Therefore, it would have been obvious to one skilled in the art at the time the invention was made to incorporate Sakashita's teaching to Kim to use the double tuned filter for the tunable filter 206 as well, for utilizing advantages of the double tuned band filter such as high quality factor Q.

Regarding claim **11**, the claim is rejected for the same reason as set forth in claim 10 above. In addition, **Kim** discloses a pre-amplifier, a mixer and a decoder as claimed (see Fig. 2A, refs. 205, 206, 212, 213).

3. Claims **13-20** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Kim** (US **5,963,856**) in view of **Liebetreu** et al (US **5,721,756**) and **Enoki** (JP 0729779 A).

Regarding claim **13**, **Kim** discloses a method of tuning a receiver for a RF signal (see Fig. 2A), the method comprising the steps of:

- receiving an RF signal (see Fig. 2A);
- mixing the filtered signal with an oscillator signal to provide an IF signal (see Fig. 2A, regarding refs. 204, 206, 207, 208);

- demodulating the IF signal to provide a digital output signal and obtain a digital figure-of-merit (see Fig. 2A, refs. 210, 211, 216, and col. 4, line 60 – col. 5, line 29), wherein it is clear that in order to tune the center frequency of the filters and also provide an AFC tuning signal, Kim would obviously, if not implicitly, teach a frequency deviation error or BER (both of which would be a digital value and would read on a “digital figure-of-merit”) is measured and converted to the control signal in order to tune the filters and LO of the receiver to the frequency of the received signal, in the similar way as disclosed by **Enoki** (see Abstract, and Figs. 1-2 regarding frequency deviation error or BER measurements for the AFC);

- adjusting the center frequency of at least one or more filters in dependence on the digital figure-of-merit (see col. 5, lines 33-36 regarding the control signal).

Here, although **Kim** discloses the ADC 211 is located within the baseband processor 210 and that the control signal is outputted from the baseband processor (see Fig. 2A regarding ref. 210), Kim is silent on whether the control signal (or figure-of-merit) is obtained/processed after the ADC 211. However, in an analogous art, **Liebetreu** discloses a method of tuning a receiver for a RF signal, wherein a digital figure-of-merit (BER) is used to generate tuning control signals for the receiver, and wherein the BER is clearly measured after ADC (see **Fig. 1, 5, Abstract and col. 7, line 5 – col. 8, line 22**). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate **Liebetreu’s** teaching to **Kim** to utilize advantages of digital signals generated in response to real-time changes in the BER of the decoded digital data signal (see Liebetreu, col. 8, lines 20-22), to measure a signal quality (i.e., BER) after the ADC 211 in **Kim**, thereby providing a figure-of-merit (BER) associated with a

digital output signal as claimed, for further improving the performance of the tuning process as suggested by **Liebetreu** (see col. 8, lines 23-35).

Regarding claims **14-15, 17**, the claims are rejected for the same reason as set forth in claim 13 above. In addition, **Kim** would disclose adjusting one or more RF filters as claimed (see Fig. 2A regarding filters 204, 206 and col. 6, lines 4-11).

Regarding claims **16, 18**, the claims are rejected for the same reason as set forth in claim 13 above. In addition, it would have been obvious to one skilled in the art at the time the invention was made to modify **Kim** to adjust filters sequentially as disclosed by **Liebetreu** (see col. 7, lines 35-45), to optimize the performance of the tunable filters.

Regarding claim **19**, the claim is rejected for the same reason as set forth in claim 13 above. In addition, it would have been obvious to one skilled in the art at the time the invention was made to modify **Kim** to adjust filters independently and sequentially as disclosed by **Liebetreu** (see col. 5, lines 7-20 and col. 7, lines 35-45), to optimize the performance of the tunable filters.

Regarding claim **20**, the claim is rejected for the same reason as set forth in claim 13 above. In addition, Kim as modified would disclose a BER as claimed (see **Liebetreu**, Fig. 5, Abstract).

Response to Arguments

4. Applicant's arguments filed 10/10/06 have been fully considered but they are not persuasive.

As to claims 10-11 regarding 35 U.S.C 103 (a) over Kim in view of Sakashita and Enoki, Applicant contends that neither Kim nor Sakashita nor Enoki teaches an RF filter is adjusted based on a figure-of-merit and contend on page 6 that

“Because Kim specifically teaches that a conventional AFC loop is used to control the frequency of the local oscillator, and not a figure of merit from the processed signal, an assertion that "Kim would obviously, if not implicitly," teach the applicants claimed invention is baseless and unsupportable. As such, the applicants respectfully maintain that the rejection of claims 10 and 11 under 35 U.S.C. 103(a) over Kim, Sakashita, and Enoki is unfounded, per MPEP 2142.”

In response, it is noted that Applicant fails to provide the reason why a “conventional” AFC loop would not use a figure-of-merit from the processed signal. In fact, a “conventional” AFC loop would use a “frequency error data” in order to adjust the local oscillator frequency, and this “frequency error data” would read on a “figure-of-merit” by itself, whereas this “frequency error data” can also be derived from other “figure-of-merit” data such as RSSI, or BER. Further, the examiner asserts that the AFC loop in Enoki’s reference is one of “conventional” AFC loops. Therefore, by simply utilizing the BER as a “digital” figure-of-merit (Enoki’s teaching) for controlling the AFC and the RF filter in Kim’s receiver circuit, Kim in view of Enoki would teach an RF filter is adjusted based on a digital figure-of-merit as claimed, for utilizing accuracy of BER measurement to improve the performance of the tuning method. Since Kim and Enoki **both** direct to an AFC loop, the combination is proper. Here, Enoki’s teaching is used solely for its teaching regarding a “digital” claimed limitation for the figure of merit.

As to claims 13-20, Applicant's arguments regarding a "conventional" AFC loop and a "figure-of-merit" are not persuasive for the same reason as set forth above.

For foregoing reasons, the examiner believes that the pending claims which rely on the patentability of adjusting the center frequency of a filter based on a digital figure-of-merit are not allowable over the cited prior art.

Conclusion

5. Any response to this action should be mailed to:

Commissioner of Patents and Trademarks
Washington, D.C. 20231

or faxed to:

(571) 273-8300 (for **formal** communications intended for entry)

(571)-273-7893 (for informal or **draft** communications).

Hand-delivered responses should be brought to Customer Service Window, Randolph Building, 401 Dulany Street, Alexandria, VA 22314.

Any inquiry concerning this communication or communications from the examiner should be directed to Duc M. Nguyen whose telephone number is (571) 272-7893, Monday-Thursday (9:00 AM - 5:00 PM).

Or to Nay Maung (Supervisor) whose telephone number is (571) 272-7882.

/Duc M. Nguyen/

Primary Examiner, Art Unit 2618

7/23/08